

CLAIMS

1. A subjacent type backlight device for illuminating a liquid crystal display panel comprising

a light source arranged in a casing opened in a light radiating surface, so that the light source faces the light radiating surface, said light source radiating light towards said light radiating surface;

light transmitting reflecting means arranged in said casing for delimiting a space inclusive of said light source, said light transmitting reflecting means transmitting a fraction of the incident light and for reflecting another fraction of the incident light; and

transmitting diffusing means arranged on said light radiating surface of said casing for diffusing the light transmitted through said light transmitting reflecting means and for causing surface light radiation;

said casing having an inner surface as a reflecting surface for reflecting the incident light; a portion of light radiated from said light source being internally reflected by said light transmitting reflecting means and said reflecting surface in said space delimited in said casing by said light transmitting reflecting means; said light portion being then transmitted through said light transmitting reflecting means.

2. The backlight device according to claim 1 wherein

said light transmitting reflecting means is formed by a light transmitting member transmitting the light incident on said light transmitting reflecting means

and a plurality of total reflection mirrors formed by patterning on said light transmitting member for reflecting the incident light by total reflection so that light incident on and transmitted through said light transmitting reflecting means bears a preset ratio to the light incident on and reflected by said light transmitting reflecting means.

3. The backlight device according to claim 1 wherein

said light transmitting reflecting means is formed by a light transmitting member transmitting the incident light and a plurality of multi-layered dielectric films, each composed of at least one high refractive index film and at least one low refractive index film, layered together, said multi-layered dielectric films transmitting and reflecting the incident light at a preset proportion so that the light incident on and transmitted through said light transmitting reflecting means will have a preset ratio to the light incident on and reflected by said light transmitting reflecting means.

4. The backlight device according to claim 1 wherein

the light transmitting reflecting means is formed by a substrate member and multi-layer dielectric films formed thereon, said multi-layer dielectric films each being composed of at least one high refractive index film and at least one low refractive index film, layered together, so that the light incident on and transmitting through said light transmitting reflecting means will have a preset ratio to the light incident on and reflected by said light transmitting reflecting means.

5. The backlight device according to claim 1 wherein

said light source is a red light emitting diode emitting red light, a green light emitting diode emitting green light and a blue light emitting diode emitting blue light.

6. The backlight device according to claim 1 wherein

said light source is a fluorescent lamp emitting white light.

7. The backlight device according to claim 1 wherein

said light transmitting reflecting means is arranged in the casing for delimiting said space as by bisecting the inside of the casing.

8. A liquid crystal display device including a light transmitting liquid crystal display panel and a subjacent type backlight device for illuminating said liquid crystal display panel, said backlight device comprising

a light source arranged in a casing opened in a light radiating surface, so that the light source faces said light radiating surface, said light source radiating light towards said light radiating surface;

light transmitting reflecting means arranged in said casing for delimiting a space inclusive of said light source, said light transmitting reflecting means transmitting a fraction of the incident light and for reflecting another fraction of the incident light; and

transmitting diffusing means arranged on said light radiating surface of said casing for diffusing the light transmitted through said light transmitting reflecting

means and for causing surface light radiation;

said casing having an inner surface as a reflecting surface for reflecting the incident light; a portion of light radiated from the light source being internally reflected by said light transmitting reflecting means and said reflecting surface in said space delimited in said casing by said light transmitting reflecting means; said light portion being then transmitted through said light transmitting reflecting means.

9. The liquid crystal display device according to claim 8 wherein

said light transmitting reflecting means is formed by a light transmitting member transmitting the light incident on said light transmitting reflecting means and a plurality of total reflection mirrors formed by patterning on said light transmitting member for reflecting the incident light by total reflection so that light incident on and transmitted through said light transmitting reflecting means bears a preset ratio to the light incident on and reflected by said light transmitting reflecting means.

10. The liquid crystal display device according to claim 8 wherein

said light transmitting reflecting means is formed by a light transmitting member transmitting the incident light and a plurality of multi-layered dielectric films each composed of at least one high refractive index film and at least one low refractive index film, layered together, said multi-layered dielectric films transmitting and reflecting the incident light at a preset proportion so that the light incident on and transmitting through said light transmitting reflecting means will

have a preset ratio to the light incident on and reflected by said light transmitting reflecting means.

11. The liquid crystal display device according to claim 8 wherein

said light transmitting reflecting means is formed by a substrate member and a multi-layer dielectric film formed thereon, said multi-layer dielectric film being composed of at least one high refractive index film and at least one low refractive index film, layered together, so that the light incident on and transmitting through said light transmitting reflecting means will have a preset ratio to the light incident on and reflected by said light transmitting reflecting means.

12. The liquid crystal display device according to claim 8 wherein

the light source is a red light emitting diode emitting red light, a green light emitting diode emitting green light and a blue light emitting diode emitting blue light.

13. The liquid crystal display device according to claim 8 wherein

the light source is a fluorescent lamp emitting white light.

14. The liquid crystal display device according to claim 8 wherein

the light transmitting reflecting means is arranged in said casing delimiting said space as by bisecting the inside of the casing.